Test: Keynesian Economics and Fiscal Policy

Instructor's Version

Answers: Free-Response Questions (45 Points Total)

1. Consider an economy in which $C = 1000 + 0.75Y^D$, $I = 200$, $G = 300$, $T = 300$, and $(X-M) = 0$.

A. Calculate equilibrium GDP. (3 points)

Answer:
$Y = 1000 + 0.75(Y - 300) + 200 + 300 + 0$
$Y = 1500 + 0.75Y - 225$
$0.25Y = 1275$
$Y = 1275/0.25 = 5100$

3 points for the calculation. 2 points if there is some small arithmetic error in the calculation.

B. Calculate saving at this level of GDP. Hint: Use the equation for leakages. (4 points)

Answer:
We have $Y = 5100$, $T = 300$, $C = 1000 + 0.75(5100 - 300) = 1000 + 3600 = 4600$.
So, using the equation that $Y = C + S + T$, we get
$5100 = 4600 + S + 300$
$S = 200$.

4 points for the calculation. 3 points if there is some small arithmetic error in the calculation.

C. Calculate the spending multiplier. (2 points)

Answer:
Spending multiplier = $1/(1 - MPC) = 1/(1 - 0.75) = 1/0.25 = 4.0$.

2 points for this calculation. No partial credit.

D. Calculate the tax multiplier. (2 points)

Answer:
Tax multiplier = $MPC/(1 - MPC) = 0.75/(1 - 0.75) = 0.75/0.25 = 3.0$.
Alternatively, students might simply point out that the tax multiplier is equal to the spending multiplier minus one.

2 points for this calculation. No partial credit.

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E. How will equilibrium GDP change if *G* increases by 100, and what is the new equilibrium level of GDP? (4 points)

Answer:
Because the spending multiplier is 4.0, GDP will increase by 400.
The new level of equilibrium GDP is 5100 + 400 = 5500.

2 points for stating the change in GDP.
2 points for recalculating GDP (5500).

F. How will equilibrium GDP change if *G* and *T* both increase by 500, and what is the new equilibrium level of GDP? (3 points)

Answer:
The balanced budget multiplier is 1, so the increase in GDP will be 500.
The new equilibrium level of GDP is 5100 + 500 = 5600.

2 points for stating the change in GDP.
1 point for the new GDP.

2. Crowding out is an important topic.

A. Use a graph of the market for loanable funds to show how the severity of crowding out depends on the slope of the supply curve. (3 points)

Answer:
The graph(s) should show that an increase in interest rates resulting from an increase in the demand for loanable funds will be greater when the supply curve of loanable funds is steep than when it is flat.

3 points for one or two graphs with relatively flat and steep supply curves and a given demand shift. Partial credit as the grader sees fit.

B. Use a graph of the investment demand curve to demonstrate how the severity of crowding out depends on the slope of the firms' demand for investment goods. (3 points)

Answer:
The graph(s) should show that the decrease in the desired level of investment resulting from an increase in the interest rate will be greater when the investment demand curve is flat than when it is steep.

3 points for one or two graphs with relatively flat and steep investment demand curves and a given change in interest rates. Partial credit as the grader sees fit.

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C. In a couple of sentences, explain how expansionary fiscal policy can lead to lower rates of long-term economic growth. (3 points)

Answer:
Expansionary fiscal policy forces government to borrow money; this drives up interest rates and reduces private investment. This reduction in private investment reduces the growth of productive capacity and, in this way, reduces the long-run growth of the economy.

1 point for saying that expansionary fiscal policy reduces private investment.
2 points for saying that reduced private investment will slow the growth of the economy.

3. Marginal propensity to consume (*MPC*) is the slope of the Keynesian *AE* curve.

A. Using an equation and words, describe the relationship between *MPC* and the Keynesian spending multiplier. (2 points)

Answer:
The spending multiplier = 1/(1 - *MPC*). When *MPC* increases, the spending multiplier increases.

1 point for each statement.

4. Explain why the events of the Great Depression were inconsistent with the classical view of the economy. (4 points)

Answer:
The classical view holds that prices and wages are flexible and that, when unemployment rises, wages will fall until firms want to hire all the labor that is available. In the Great Depression, unemployment remained high for a long time, clearly demonstrating that wages were not sufficiently flexible to return quickly to full employment.

2 points for stating the classical belief about flexibility of wages and the economy automatically adjusting to equilibrium.
2 points for stating that prolonged high unemployment is inconsistent with this belief of the classical view.

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5. Use the *AD*/*AS* model to compare the effects of expansionary fiscal policy at two points on the *AS* curve: the Keynesian section and full employment. Use graphs, and label everything completely. (4 points)

Answer:
There should be either one or two *AD*/*AS* diagrams showing a horizontal shift in the *AD* curve in the flat section of the *AS* curve, in the upward-sloping section of the curve and in the vertical section of the curve. In the Keynesian (horizontal) section, the effect is an increase in GDP and no increase in the price level. In the upward-sloping portion (full employment), the effect is increases in both GDP and the price level.

2 points for diagram(s) showing the AD increases.
2 points for the statements about the effects of AD increases in both of the segments of the AS curve. Partial credit for these two points as instructor deems fit.

6. Taxes may be variously described as progressive, proportional, or regressive, depending on how the percentage of income paid in tax changes as income rises.

A. You can show that a tax on consumption is regressive using the Keynesian consumption function. Suppose $C = 1000 + .5Y^D$, and the government collects 10% of all consumption expenditures in taxes. Calculate the taxes paid by the household earning $Y^D = 1000$ with the household earning $Y^D = 10{,}000$. Show that the consumption tax is regressive — show your math. (4 points)

Answer:
$C = 1000 + 0.5 \cdot Y$, $T = 0.10*C$
If $Y = 1000$, $C = 1000 + 0.5 \cdot 1000 = 1500$, $T = 0.10 \cdot 1500 = 150$,
$T/Y = 150/1000 = 15\%$.
If $Y = 10{,}000$, $C = 1000 + 0.5 \cdot 10{,}000 = 6000$, $T = 0.10 \cdot 6000 = 600$,
$T/Y = 600/10000 = 6\%$.
Because the tax paid as a percentage of income falls as income rises, the tax is regressive.

2 points for calculations.
2 points for final conclusion.

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B. A number of people have argued for a flat tax with each person getting a personal exemption of, say, $10,000, meaning that they pay zero tax on the first $10,000 of income and then 20% on all income above that. Is such a flat tax progressive, proportional, or regressive? Offer an example to demonstrate your answer. (4 points)

Answer:
Such a tax will be progressive.
For example, a person making $15,000 in income will pay no tax on the first $10,000 of income and 20% on the next $5,000, for a total tax bill of $1,000.
T/Y = 1000/15000 = 0.067, or 6.7%.
A person making $100,000 in income will pay no tax on the first $10,000 of income and 20% on the next $90,000, for a total tax bill of $18,000.
T/Y = 18000/100000 = 0.18 or 18%.

2 points for appropriate examples.
2 points for the statement that such a tax will be progressive.

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